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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/776,057	TING ET AL.
	Examiner	Art Unit	
	JAY A. MORRISON	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>07 September 2006</u>.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-41</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-41</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Remarks

1.   Claims 1-41 are pending.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

     This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

3.   Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Dada (Publication Number 2004/0093347 A1).

        As per claim 19, Dada teaches

        A method for comparing a first order-independent data set comprising unique

elements with a second order-independent data set comprising unique elements, the

method comprising the steps of: (see abstract)

        (a) for each entry in a first data set, placing the entry in a hash table; (paragraph

[0022])

        (b) selecting an entry from a second data set; (paragraph [0023])

        (c) looking up the selected entry in the hash table; (paragraph [0025])

        (d) removing, in response to locating the selected entry in the hash table, the

selected entry from the hash table; (paragraph [0025])

        (e) determining if additional data set entries exist; and (paragraph [0025])

        (f) looping to step (b) in response to identifying additional second data set

entries. (paragraph [0022]-[0023])

        Dada discloses the claimed invention except for storing the hash values in the

same hash table. It would have been obvious to one having ordinary skill in the art at

the time the invention was made to combine the two hash tables, since it has been held

that omission of an element and its function in a combination where the remaining

elements perform the same functions as before involves only routine skill in the art. In re

Karlson, 136 USPQ 184.

As per claim 21, Dada teaches

A method for comparing a first data set with a second data set, the method

comprising the steps of: (see abstract)

creating a hash table of entries of the first data set; (paragraph [0022])

locating, for each entry in the second data set, an entry in the hash table;

(paragraph [0025])

and removing, in response to locating an entry in the hash table, the located

entry. (paragraph [0025])

the step of recording, in response to not locating an entry in the hash table, that

the entry in the second data set is second date set unique. (paragraph [0026])

Dada discloses the claimed invention except for storing the hash values in the

same hash table. It would have been obvious to one having ordinary skill in the art at

the time the invention was made to combine the two hash tables, since it has been held

that omission of an element and its function in a combination where the remaining

elements perform the same functions as before involves only routine skill in the art. *In re*

Karlson, 136 USPQ 184.

4.   Claims 1-3,5-6,9,17,20, 22-26 and 39-40 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Dada (Publication Number 2004/0093347 A1) in view of

Demaine et al. ("Adaptive set intersections, unions, and differences", Proceedings of the

Annual ACM-SIAM Symposium on Discrete Algorithms, pp. 743-752, Year: 2000).

        As per claim 1, Dada teaches

        A method for comparing a first order-independent data set comprising unique

elements with a second order-independent data set comprising unique elements, the

method comprising the steps of: (see abstract)

        (a) for each entry in the first data set, placing the entry in a hash table;

(paragraph [0022])

        (b) selecting an entry from the second data set; (paragraph [0023])

        (c) looking up the selected entry in the hash table; (paragraph [0025])

        (d) removing, in response to locating the selected entry in the hash table, the

selected entry from the hash table; (paragraph [0025])

        (e) determining if additional second data set entries exist; (paragraph [0025])

        (f) looping to step (b) in response to identifying additional second data set

entries. (paragraph [0022]-[0023])

        Dada discloses the claimed invention except for storing the hash values in the

same hash table. It would have been obvious to one having ordinary skill in the art at

the time the invention was made to combine the two hash tables, since it has been held

that omission of an element and its function in a combination where the remaining

elements perform the same functions as before involves only routine skill in the art. *In re*

Karlson, 136 USPQ 184.

Dada does not explicitly indicate "(g) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table"

However, Demaine teaches "(g) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table" (other elements reported in answer, section 2.2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada and Demaine because using the steps of "(g) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table" would have given those skilled in the art the tools to improve the invention by using Boolean set operations for calculating set differences. This gives the user the advantage of being able to use a common Boolean function for determining set differences.

As per claim 2, Dada teaches

the step of identifying, in response to not locating the selected entry in the hash table, that the selected entry is second data set unique. (paragraph [0026])

As per claim 3, Dada teaches

the step of performing, in response to not locating the selected entry in the hash table, a remedial function. (paragraph [0027])

As per claim 5, <u>Dada</u> teaches

the step of identifying in response to no additional entries existing, any remaining

entries in the hash table data ms being first data set unique. (paragraph [0026])

As per claim 6, <u>Dada</u> teaches

the step of performing in response to no additional entries existing, a remedial

function. (paragraph [0027])

As per claim 9, <u>Dada</u> teaches

the step of removing the selected entry from the hash table occurs in response to

identifying a match between a selected entry of the first data set and an entry of the

second data set. (paragraph [0025])

As per claim 17,

This claim is rejected on grounds corresponding to the arguments given above

for rejected claim 1 and is similarly rejected.

As per claim 20, <u>Dada</u> teaches

A method for comparing a first data set with a second data set, the method

comprising the steps of: (see abstract)

creating a hash table of entries of the first data set; (paragraph [0022])

locating, for each entry in the second data set, an entry in the hash table; (paragraph [0025])

and removing, in response to locating an entry in the hash table, the located entry. (paragraph [0025])

Dada discloses the claimed invention except for storing the hash values in the same hash table. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the two hash tables, since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson, 136 USPQ 184.*

Dada does not explicitly indicate "recording, in response to at least one entry remaining in the hash table, a difference between the first data set and the second data set".

However, Demaine teaches "recording, in response to at least one entry remaining in the hash table, a difference between the first data set and the second data set" (other elements reported in answer, section 2.2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada and Demaine because using the steps of "recording, in response to at least one entry remaining in the hash table, a difference between the first data set and the second data set" would have given those skilled in the art the tools to improve the invention by using Boolean set operations for calculating set

differences. This gives the user the advantage of being able to use a common Boolean

function for determining set differences.

As per claim 22, <u>Dada</u> teaches

A method for comparing a first data set with a second data set, the method

comprising the steps of:

(a) selecting an entry from the first data set; (paragraph [0022])

(b) determining if the selected entry from the first data set is in a hash table;

(paragraph [0025])

(c) adding, in response to determining that the selected entry from the first data

set is not in the hash table, the selected entry from the first data set to the hash table;

(paragraph [0025])

(d) removing from the hash table, in response to determining that the selected

entry from the first data set is in the hash table, the selected entry from the first data set;

(paragraph [0025])

(e) selecting an entry from the second data set; (paragraph [0023])

(f) determining if the selected entry from the second data set is in the hash table;

(paragraph [0025])

(g) adding, in response to determining that the selected entry from the second

data set is not in the hash table, the selected entry from the second data set to the hash

table; (paragraph [0025])

(h) removing, in response to determining that the selected entry from the second data set is in the hash table, the selected entry from the second data set from the hash table; (paragraph [0025])

(i) independently continuing steps (a) through (d) and (e) through (h) for all entries in the first and second data sets until both the first and second data sets have been completely processed. (paragraphs [0025])

Dada discloses the claimed invention except for storing the hash values in the same hash table. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the two hash tables, since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson, 136 USPQ 184.*

Dada does not explicitly indicate "(j) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table"

However, Demaine teaches "(j) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table" (other elements reported in answer, section 2.2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada and Demaine because using the steps of "(j) reporting a difference between the first data set and the second data set in response to at least one first data set entry remaining in the hash table" would have given those

skilled in the art the tools to improve the invention by using Boolean set operations for calculating set differences. This gives the user the advantage of being able to use a common Boolean function for determining set differences.

As per claim 23, Dada teaches

the step of adding the selected entry from the first data set to the hash table further comprises the step of including information with the selected entry from the first data set identifying the selected entry from the first data set as originating from the first data set. (paragraph [0026])

As per claim 24, Dada teaches

the step of adding the selected entry from the second data set to the hash table further comprises the step of including information with the selected entry from the second data set identifying the selected entry from the second data set as originating from the second data set. (paragraph [0026])

As per claim 25,

the step of removing the selected entry from the second data set from the hash table occurs in response to identifying a match between a selected entry from the second data set and an entry from the first data set. (paragraph [0026])

As per claim 26, Dada teaches

the step of: (k) recording all entries remaining in the hash table as being unique

to either the first data set or the second data set. (paragraph [0026])

As per claim 39, Dada teaches

the step of reporting comprises recording the difference on a disk. (paragraph

[0034], lines 4-9)

As per claim 40,

This claim is rejected on grounds corresponding to the arguments given above

for rejected claim 39 and is similarly rejected.

5.   Claims 4 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Dada (Publication Number 2004/0093347 A1) in view of Demaine et al. ("Adaptive

set intersections, unions, and differences", Proceedings of the Annual ACM-SIAM

Symposium on Discrete Algorithms, pp. 743-752, Year: 2000) and further in view of

Carteau (Patent Number 6,606,694).

As per claim 4,

Neither Dada nor Demaine explicitly indicate "the remedial function comprises

deleting the selected entry of the second data set."

However, Carteau discloses "the remedial function comprises deleting the selected entry of the second data set" (column 6, lines 20-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Carteau because using the steps of "the remedial function comprises deleting the selected entry of the second data set" would have given those skilled in the art the tools to improve the invention by mirroring disks without negatively impacting performance during backup. This gives the user the advantage of having the system available during backup.

As per claim 7,

Neither Dada nor Demaine explicitly indicate "the remedial function comprises deleting the selected entry of the first data set."

However, Carteau discloses "the remedial function comprises deleting the selected entry of the first data set" (column 6, lines 20-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Carteau because using the steps of "the remedial function comprises deleting the selected entry of the first data set" would have given those skilled in the art the tools to improve the invention by mirroring disks without negatively impacting performance during backup. This gives the user the advantage of having the system available during backup.

As per claim 8,

Neither Dada nor Demaine explicitly indicate "the remedial function comprises the step of transferring the selected entry from the first data set to the second data set".

However, Carteau discloses "the remedial function comprises the step of transferring the selected entry from the first data set to the second data set" (column 6, lines 20-29)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Carteau because using the steps of "the remedial function comprises the step of transferring the selected entry from the first data set to the second data set" would have given those skilled in the art the tools to improve the invention by mirroring disks without negatively impacting performance during backup. This gives the user the advantage of having the system available during backup.

6.   Claims 10-11,18 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dada (Publication Number 2004/0093347 A1) in view of Demaine et al. ("Adaptive set intersections, unions, and differences", Proceedings of the Annual ACM-SIAM Symposium on Discrete Algorithms, pp. 743-752, Year: 2000) and further in view of Aiken (Patent Number 6,240,409).

As per claim 10,

Neither Dada nor Demaine explicitly indicate "the hash table comprises a B-tree."

However, <u>Aiken</u> discloses "the hash table comprises a B-tree" (column 13, lines 30-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine <u>Dada</u>, <u>Demaine</u> and <u>Aiken</u> because using the steps of "the hash table comprises a B-tree" would have given those skilled in the art the tools to improve the invention by enabling quick evaluation. This gives the user the advantage of not having to wait for results.

As per claim 11,

Neither <u>Dada</u> nor <u>Demaine</u> explicitly indicate "the hash table comprises a fast lookup data structure."

However, <u>Aiken</u> discloses "the hash table comprises a fast lookup data structure" (column 13, lines 30-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine <u>Dada</u>, <u>Demaine</u> and <u>Aiken</u> because using the steps of "the hash table comprises a fast lookup data structure" would have given those skilled in the art the tools to improve the invention by enabling quick evaluation. This gives the user the advantage of not having to wait for results.

As per claim 18,

This claim is rejected on grounds corresponding to the arguments given above for rejected claim 10 and is similarly rejected.

As per claim 27-28,

These claims are rejected on grounds corresponding to the arguments given
above for rejected claims 10-11 and are similarly rejected.

7.   Claims 12-16 and 29-31 are rejected under 35 U.S.C. 103(a) as being
unpatentable over Dada (Publication Number 2004/0093347 A1) in view of Demaine et
al. ("Adaptive set intersections, unions, and differences", Proceedings of the Annual
ACM-SIAM Symposium on Discrete Algorithms, pp. 743-752, Year: 2000) and further in
view of Bailey et al. ('Bailey' hereinafter) (Patent Number 6,473,767).

As per claim 12, Dada teaches

the first data set comprises a set of ... entries on a source system.

Neither Dada nor Demaine explicitly indicate "directory".

However, Bailey discloses "directory" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the
invention was made to combine Dada, Demaine and Bailey because using the steps of
"directory" would have given those skilled in the art the tools to improve the invention by
detect parts of a file system that are added or missing. This gives the user the
advantage of having up to date backup information.

As per claim 13, Dada teaches

the second data set comprises a set of entries of a … on a destination system.

Neither Dada nor Demaine explicitly indicate "directory".

However, Bailey discloses "directory" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Bailey because using the steps of "directory" would have given those skilled in the art the tools to improve the invention by detect parts of a file system that are added or missing. This gives the user the advantage of having up to date backup information.

As per claim 14, Dada teaches

the first data set comprises a set of … entries on a destination system.

Neither Dada nor Demaine explicitly indicate "directory".

However, Bailey discloses "directory" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Bailey because using the steps of "directory" would have given those skilled in the art the tools to improve the invention by detect parts of a file system that are added or missing. This gives the user the advantage of having up to date backup information.

As per claim 15 Dada teaches

the second data set comprises … entries on a source data set.

Neither Dada nor Demaine explicitly indicate "directory".

However, Bailey discloses "directory" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Bailey because using the steps of "directory" would have given those skilled in the art the tools to improve the invention by detect parts of a file system that are added or missing. This gives the user the advantage of having up to date backup information.

As per claim 16, Dada teaches

Neither Dada nor Demaine explicitly indicate "the first data set and the second data set are on different storage devices."

However, Bailey discloses "first data set and second data set are on different storage devices" (column 1, lines 23-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Bailey because using the steps of "first data set and second data set are on different storage devices" would have given those skilled in the art the tools to improve the invention by detect parts of a file system that are added or missing. This gives the user the advantage of having up to date backup information.

As per claim 29-30,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 12-13 and are similarly rejected.

As per claim 31,

This claim is rejected on grounds corresponding to the arguments given above for rejected claim 16 and is similarly rejected.

8.   Claims 32-36, 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dada (Publication Number 2004/0093347 A1) in view of Demaine et al. ("Adaptive set intersections, unions, and differences", Proceedings of the Annual ACM-SIAM Symposium on Discrete Algorithms, pp. 743-752, Year: 2000) and further in view of Bailey et al. ('Bailey' hereinafter) (Patent Number 6,473,767) and further in view of Bailey et al. ('Bailey' hereinafter) (Patent Number 6,473,767).

As per claim 32, Dada teaches

A system for performing a consistency check of a source ... replicated to a destination ... by comparing entries in the source and destination ..., the system comprising: (see abstract)

one or more storage disks adapted to store one or more of a group consisting of the source directory and the destination directory; (paragraph [0033])

and a process adapted to compare entries in the source ... with entries in the

destination ... by walking the source and destination ... only once, whereby utilization of

storage subsystems associated with the source and destination ... is limited by only

walking each of the source and destination ... once. (paragraphs [0022]-[0028])

Dada does not explicitly indicate and further adapted to report a difference

between the source and the destination.

However, Demaine discloses and further adapted to report a difference between

the source and the destination (other elements reported in answer, section 2.2).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Dada and Demaine because using the steps of and

further adapted to report a difference between the source and the destination would

have given those skilled in the art the tools to improve the invention by using Boolean

set operations for calculating set differences. This gives the user the advantage of being

able to use a common Boolean function for determining set differences.

Neither Dada nor Demaine explicitly indicate "directories".

However, Bailey discloses "directories" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Dada, Demaine and Bailey because using the steps of

"directories" would have given those skilled in the art the tools to improve the invention

by detect parts of a file system that are added or missing. This gives the user the

advantage of having up to date backup information.

As per claim 33, Dada teaches

the process executes on a computer associated with the source. (paragraph

[0030])

Neither Dada nor Demaine explicitly indicate "directories".

However, Bailey discloses "directories" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Dada, Demaine and Bailey because using the steps of

"directories" would have given those skilled in the art the tools to improve the invention

by detect parts of a file system that are added or missing. This gives the user the

advantage of having up to date backup information.

As per claim 34, Dada teaches

the process executes on a computer associated with the destination. (paragraph

[0030])

Neither Dada nor Demaine explicitly indicate "directories".

However, Bailey discloses "directories" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Dada, Demaine and Bailey because using the steps of

"directories" would have given those skilled in the art the tools to improve the invention

by detect parts of a file system that are added or missing. This gives the user the

advantage of having up to date backup information.

As per claim 35, <u>Dada</u> teaches

the process is further adapted to remove matching entries from a hash table,

whereby future look up operations in the hash table are enabled to be performed faster

due to a smaller size of the hash table. (paragraph [0026])

As per claim 36, <u>Dada</u> teaches

A system for performing a consistency check of a source ... and a destination ...

by comparing entries in the source and destination ..., the system comprising: (see

abstract)

a process adapted to select alternating entries from the source and destination

... to be added to a hash table and further adapted to remove matching entries from the

hash table, whereby a size of the hash table is limited to a number of dissimilar entries

of the source and destination. (paragraphs [0022],[0026])

<u>Dada</u> does not explicitly indicate and further adapted to report a difference

between the source and the destination in response to the number of dissimilar entries

being greater than zero.

However, <u>Demaine</u> discloses and further adapted to report a difference between

the source and the destination in response to the number of dissimilar entries being

greater than zero (other elements reported in answer, section 2.2).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine <u>Dada</u> and <u>Demaine</u> because using the steps of and

further adapted to report a difference between the source and the destination in

response to the number of dissimilar entries being greater than zero would have given those skilled in the art the tools to improve the invention by using Boolean set operations for calculating set differences. This gives the user the advantage of being able to use a common Boolean function for determining set differences.

Neither Dada nor Demaine explicitly indicate "directories".

However, Bailey discloses "directories" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Bailey because using the steps of "directories" would have given those skilled in the art the tools to improve the invention by detect parts of a file system that are added or missing. This gives the user the advantage of having up to date backup information.

As per claim 38, Dada teaches

the ... comparison process is further adapted to alternate in selecting entries from the source and destination ... when walking the source and destination. (paragraphs [0026],[0029])

Neither Dada nor Demaine explicitly indicate "directories".

However, Bailey discloses "directories" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Dada, Demaine and Bailey because using the steps of "directories" would have given those skilled in the art the tools to improve the invention

by detect parts of a file system that are added or missing. This gives the user the

advantage of having up to date backup information.

As per claim 41, Dada teaches

the process is further adapted to report the difference by recording the difference

on the storage disks. (paragraph [0034], lines 4-9)

9.   Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dada

(Publication Number 2004/0093347 A1) in view of Bailey et al. ('Bailey' hereinafter)

(Patent Number 6,473,767).

As per claim 37, Dada teaches

A system for comparing entries in a source ... with entries on a destination ... to

ensure consistency of replicated data between the source and destination ..., the

system comprising: (see abstract)

a computer associated with at least one of the source and destination ..., the

computer comprising a directory comparison process adapted to perform a comparison

of entries in the source and destination ... by walking each ... once and placing entries

in a hash table and further adapted to remove matching entries from the hash table,

whereby computational cost is reduced for future look up operations in the hash table.

(paragraphs [0022],[0026])

Neither Dada nor Demaine explicitly indicate "directories".

However, Bailey discloses "directories" (column 3, lines 6-27).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Dada, Demaine and Bailey because using the steps of

"directories" would have given those skilled in the art the tools to improve the invention

by detect parts of a file system that are added or missing. This gives the user the

advantage of having up to date backup information.

Response to Arguments

10.   Applicant's arguments, see pages 12-14, filed 9/7/2006, with respect to the 35

U.S.C. 101 Rejections regarding non-statutory subject matter have been fully

considered and are persuasive. It is respectfully noted that it is assumed for purposes

of examination that the "means for" elements are all construed as being embodied in

hardware and the aforementioned claims are therefore statutory. The 35 U.S.C 101

Rejections of claims 17-18 have been withdrawn.

11.   Applicant's remaining arguments filed 9/7/2006 have been fully considered but

they are not persuasive.

Applicant argues that Dada does not disclose removing, in response to locating

the selected entry in the hash table, the selected entry from the hash table.

Respectfully, it is noted that Dada discloses a union of the two hash tables (paragraph

[0025], lines 5-8) which creates a superset and then goes on in the next paragraph to discuss determining if a key is not present within either hash table. It is respectfully submitted that a difference operation is the opposite operation of the union or intersection operation, and given the discussion of difference and unions within the Dada reference that it would have been obvious to accomplish the claimed invention. Therefore Dada discloses the limitation.

In order to further illustrate the point that the difference and union operations are not only well-known in the art but directly related opposite operation, the Demaine reference is added to teach the output of the difference set, and particular attention should be given to the elimination of the elements in either operation (section 2.1) to reduce the number comparisons necessary. This is the identical concept which is claimed by the Applicant. Respectfully, such operations are very common and the concepts can be found in virtually every data structure and algorithm book, such as those referenced by Demaine.

Applicant also argues that Dada does not disclose only walking each of the source and destination directories once. Respectfully, it is noted that Dada discloses union and difference operations (paragraph [0025], lines 5-8; paragraph [0026], lines 1-10), which as shown in earlier arguments contain inherent operations elimination of elements or entries of the set. These concepts are equivalent when applied to the source and destination structures, since in view of the instant specification the alternate embodiment these claims cover discloses that the hash entries added for the destination side are almost immediately matched by removal via source-side

comparisons (if matched). Respectfully, given this information the difference is repeatedly performed on hash tables which contain few entries and this does not requiring repeatedly walking of the structures because they are kept small, which is inherent in this case in applying the <u>Dada</u> reference. Therefore <u>Dada</u> discloses the limitation.

Conclusion

12.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

        A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record, listed on form PTO-892, and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay A. Morrison whose telephone number is (571) 272-7112. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached on (571) 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jay Morrison   /Tim T. Vo/
TC2100   Supervisory Patent Examiner, Art

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